

CLAIMS:

1. A method of magnetic resonance imaging comprising the steps of:

- a) providing a magnetic field within an imaging volume,
- b) moving a subject continuously along a predetermined path,
- c) defining a sub-volume of the imaging volume, together with the subject, the sub-volume
5 being selected such that the time of movement of the sub-volume within the imaging
volume is sufficient for magnetic resonance image data acquisition with a predefined
resolution,
- d) performing a step of magnetic resonance image data acquisition for the sub-volume,
- e) defining a subsequent sub-volume which neighbours the sub-volume on the
10 predetermined path to perform a subsequent step of magnetic resonance image data
acquisition for the subsequent sub-volume.

2. The method of claim 1, whereby a three-dimensional imaging method is used
for the step of magnetic resonance image data acquisition for the sub-volume.

3. The method of claims 1 or 2, whereby a multislice imaging method is used for
the step of magnetic resonance image data acquisition for the sub-volume, the sub-volume
containing a stack of two dimensional slices along the predetermined path.

4. The method of any one of the preceding claims 1, 2 or 3 the sub-volume
having an extension along the predetermined path between 3 and 7 cm, preferably 5 cm.

5. The method of any one of the preceding claims 1 to 4, the speed of movement
being between 0,5 and 5 mm per second, preferably between 1 and 2,5 mm per second.

6. The method of any one of the preceding claims 1 to 5, whereby the magnetic
resonance image data acquisition is performed by means of a parallel imaging technique.

7. The method of claim 6 whereby a SENSE-type parallel imaging technique is used.

8. The method of any one of the preceding claims 1 to 7, the magnetic resonance
5 image data acquisition being cyclically repeated, whereby one repetition is performed for each one of the sub-volumes.

9. The method of any one of the preceding claims 1 to 8, the sub-volumes having
a first extension along the predetermined path, the imaging volume having a second
10 extension along the predetermined path, the second extension being at least twice the first extension.

10. A computer program product, such as a digital storage medium, for magnetic resonance imaging comprising program means to perform the steps of:

- 15 - defining a sub-volume of an imaging volume provided by a magnetic field, continuously moving a sub-volume along a predetermined path together with a subject, the sub-volume being selected such that the time of movement of the sub-volume within the imaging volume is sufficient for magnetic resonance image data acquisition with a preferred resolution,
- 20 - defining a subsequent sub-volume which neighbours the sub-volume on the predetermined path to perform a subsequent step of magnetic resonance image data acquisition.

11. The computer program product of claim 10, the program means being adapted
25 to be employed for a parallel imaging technique.

12. A magnetic resonance imaging device comprising:

- means for providing a magnetic field within an imaging volume,
- means for moving a subject continuously along a predetermined path,
- 30 - a control unit for generating of control signals for magnetic resonance image data acquisition within a sub-volume ($j=5, j=6$) of the imaging volume, the sub-volume being moved along the predetermined path together with the subject, the sub-volume being selected such that the time of movement of the sub-volume within the imaging volume is sufficient for magnetic resonance image data acquisition with a predefined resolution and

for subsequent magnetic resonance image data acquisition within a subsequent sub-volume which neighbours the sub-volume on the predetermined path.

13. The magnetic resonance imaging device of claim 12, the means for moving
5 being adapted to move the subject with a speed of 0,5 to 5 mm per second, preferably 1 to 4 mm per second.

14. The magnetic resonance imaging device of claims 12 or 13 further comprising
10 means for a parallel imaging technique based on simultaneous reception through multiple receive channels.

15. The magnetic resonance imaging device of any one of the preceding claims 12 to 14, the control unit being adapted to perform cyclic repetitions of the magnetic resonance image data acquisition.

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16. The magnetic resonance imaging device of claims 12 to 15, the sub-volumes having a first extension along the predetermined path and the imaging volume having a second extension along the predetermined path, the second extension being at least twice the first extension.

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17. The magnetic resonance imaging device of anyone of the preceding claims 12 to 16, the predetermined path being a straight line and the means for providing a magnetic field comprising a cylindrical magnet.

25 18. The magnetic resonance imaging device of anyone of the preceding claims 12 to 16, the predetermined path being curved and the means for providing a magnetic field comprising an open magnetic resonance system, such as a C-magnet.